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NOVEMBER 1989

FOOD ENGINEERING

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**BUILDING
GROW**

12TH ANNUAL NEW FOOD PLANT CONSTRUCTION

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FOOD ENGINEERING



COVER STORY

Food Engineering's 12th annual new plant survey shows that the food industry construction boom is continuing with a record 390 plants reported, up from 369 last year.

Pages 64 to 82

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This month's Report features the joint pork venture between a Central Soya subsidiary and Mitsubishi; a story on U.S. food system sales reaching \$638 billion in 1988; why Americans are expected to increase food spending as they get older; and a new study showing the 50+ market to be multi-dimensional.

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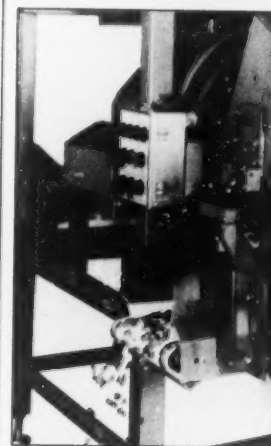
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Special Emphasis

INSPECTION AND MACHINE VISION

Significant improvements in machine vision sales may result because of the food industry's need to compete globally.

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Americans expected to increase food spending as they get older

Food consumption
(adult daily intake, in grams)

Males:	Grams/ day	% change
Age 19-22	2,008	—
Age 23-34	2,143	+ 6.7
Age 35-50	2,193	+ 2.3
Age 51-64	2,175	- 0.8
Age 65-74	1,969	- 7.5
Age 75 +	1,894	- 3.8
Females:		
Age 19-22	1,560	—
Age 23-34	1,719	+ 10.2
Age 35-50	1,780	+ 3.5
Age 51-64	1,807	+ 1.5
Age 65-74	1,694	- 6.3
Age 75 +	1,526	- 9.9

Sources: United States Department of Agriculture; Nationwide Food Consumption Survey.

The above graph illustrates the fluctuations in eating habits by gender and age. Notice the largest increases in food intake occur as both men and women enter their thirties with the tapering off rate differing by sex.

Changes in age distribution are likely to have the biggest impact on per person food demand," said James R. Blaylock, agricultural economist with the U.S. Department of Agriculture (USDA) in *Demographic Directions*, published by The Food Institute of Fairlawn, NJ. An aging populace will have a dramatic impact on the food industry because as people get older they spend more money on food. The report added that regional population distribution changes and changing racial mix will have little or no impact on future food demands.

USDA figures show that Americans eat more as they get older. The Nationwide Food Consumption study demonstrates that males aged 23-34 eat 6.7 percent more food than men in

the 19-22 age bracket. Women aged 23-34 consume 10.2 percent more than those in the 19-22 age bracket. While men continue to show food intake increase up to age 50, women show an intake gain right up to age 64.

35-54 year old affluent

Another finding of the report was that affluent household groups in the 35-54 age range spend more on food than other groups. In addition to having larger incomes to dispose of, 35-54 year olds also tend have more mouths to feed since they are commonly married with children.

Meanwhile, on the lower side of the age spectrum, consumers in the under-25 age category comprise only 5.8 percent of all households. This group accounts for fewer households because more than half of the people aged 18-24 still live at home with their parents. Young people are putting off marriage which also accounts for fewer households within the under-25 category. The average age for first-time marriages has rolled back an average of two years over the last decade. In 1988, the average first marriage for a female was 23.6 and 25.9 for males. Approximately 17.6 percent of the under-25 income is spent on food: 10.9 percent at home and 6.6 percent away from home.

The biggest block

In contrast, the 25-34 year olds comprise the largest single block by age, accounting for 22.4 percent of all U.S. households. All members of this group are official "baby boomers." Approximately 11 percent of them live at home with their parents as of 1988, up from 9 percent in 1980. On the average 25-34 year olds have double the income of the under-25s and have more children to feed. However, spending for food accounts for only 13.3 percent of their income: 9 percent at home and 4.3 percent away.

More food dollars flow from the 35-44 year old bracket than any other. This group comprises approximately 20.9 percent of all households and two-thirds of these families are comprised of the traditional married-couple variety. Approximately 12.4 percent of the

35-44 year olds had combined after-tax income of \$40,000 or more in 1984 with approximately 14 percent spent on food: 9.8 percent at home and 4.3 percent away.

Continued gains are projected for food spending by this group with expenditures expected to escalate from 1987's \$66 billion to \$82.27 billion in 1995. The share of at-home spending is projected to grow from 1987's 27 percent to an estimated 30.1 percent in 1995.

Members of the 45-54 year old cohort are expected to spend \$58.7 billion on food by 1995, up from \$44.25 billion in 1987. At-home spending by this group is expected to gain from 18.1 percent in 1987 to 24.2 percent by 1995. Away-from-home expenditures are expected to grow almost as much as at-home spending from \$30.81 billion in 1987 to an estimated \$42.87 billion in 1995. Food marketers should note that present-day members of the thirty-something crowd will be full-fledged members of the 35-44 and 45-54 year old groups, which combined will have over half the food purchasing power by the year 2000.

At-home food expenditures begin to drop with the 55-64 year old group with 1987 spending of \$37.16 dropping to a projected \$34.44 billion in 1995. However in the period from 1995 through 2000, 55-64 year old households are expected to increase at-home expenditures from the estimated \$34.33 billion in 1995 to a projected \$39.20 billion by 2000.

Between 1987 and 1995, the number of households of 65-74 year olds is expected to grow modestly to increase 1987 at-home food expenditures of \$25.67 billion to an estimated \$26.79 billion by 1995. Growth in this age category is expected to drop from 1995 to 2000 by one percentage point to a projected \$25.6 billion by 2000.

Over 50 percent of the 75+ households are comprised of single persons. At-home food spending by this senior group is expected to dramatically grow from \$13.94 billion in 1987 to a projected \$17.49 billion by 1995. Seventy-five plus households will outspend the under-25 group by almost three-to-one by 1995.

For further information on this study, contact The Food Institute, 28-12 Broadway, Fair Lawn, NJ 07410.

PACKAGING

Research survey shows consumers prefer multi-packing for cans

Purchase habits for canned vegetables

Frequency of purchase	
Once a week or more	39%
Once every 2-3 weeks	37
Once a month	19
Once every 2-3 months	3
Base:	201
Sizes usually purchased	
Small/single serving (eight ounces or less)	17
Medium/regular size (nine- to 16-ounce)	76
Large/family size (over 16 ounces)	12
Multiple responses	
Base:	201

Source: Elrick and Lavidge, Inc.

As seen in this chart, canned vegetables are purchased regularly, where those surveyed (39 percent) said they purchase canned vegetables once a week or more often. Three-fourths of the users (76 percent) said they usually buy the medium/regular size can. Because some respondents claimed to purchase two sizes of canned vegetables equally, the totals displayed add to more than 100 percent. (Source: Elrick and Lavidge, Inc.)

According to a recent survey conducted in six major metropolitan markets, shoppers like the discounts and the carrying and stacking ease associated with multi-packed foods. The survey, conducted for the Can Manufacturers Institute, shows high levels of interest by consumers in multi-packed cans of pet food, juice, tuna, soup, vegetables and fruit.

A total of 601 mall intercept interviews were conducted with consumers during May 1989. The interviews were conducted in six markets, selected on the basis of geographic dispersion: Atlanta, Baltimore, Denver, Chicago, Los Angeles, and metro New York.

Interviews were conducted with consumers who met the following criteria: 18 years or older, were the primary food shopper for the household, and did not work for an advertising agency, marketing research firm, a

manufacturer or distributor of food products, or a package design firm. Consumers who had purchased one or more of the four key products in the past month were interviewed for the study.

The survey asked a series of questions designed to investigate consumers' ideas about the expected costs for various sizes and types of multi-packs. The results clearly showed that buyers expect a discount when purchasing canned food products in multi-packs. Consumers also expect that the more cans included in a multi-pack, the lower the price per can will be. Findings from questions regarding expected cost for the various packaging alternatives also suggest that consumers expect to pay slightly more for variety.

The Can Manufacturers Institute hopes to fuel this multi-packing buying trend with its CANPACK promo-

tion, a new incentive program for processors of canned vegetables, soup, and pet food. CMI will award credits toward the purchase of multi-pack materials and/or equipment to qualifying processors. To earn credits, food processing companies must first sign up for the program and then increase their purchases of metal cans for vegetables, pet food or soup by specific amounts during a 12-month period beginning January 1990.

Can Manufacturers Institute, 1625 Massachusetts Avenue, N.W., Washington, DC 20036 **Circle 221**

Company acquires film operations

American Mirrex Corporation has announced its acquisition of Hoechst Celanese Rigid PVC Film Division, a major supplier of PVC packaging and technical films located in New Castle, DE. American Mirrex plans to expand and develop its rigid PVC film product lines for packaging and specialty applications on a worldwide basis.

The New Castle facility, with a 120 million pounds per year capacity, will continue under its current leadership. A new three-year contract with the local union will enable the organization to provide a continuous supply of products to its customers. Major customer applications for American Mirrex rigid PVC film include blister and clamshell packaging and shrink and label films.

New technology receives joint effort

The Eastman Chemicals Division of Eastman Kodak Company and the Airco Coating Technology Division of the BOC Group plc have formally agreed to work together to commercialize a new high-performance barrier for plastics packaging materials.

The new technology, QLF, is based on plasma enhanced chemical vapor deposition and has demonstrated the required performance for providing high barrier, transparent, recyclable coatings for bottles and films.

This new undertaking combines Airco's expertise in plasma enhanced chemical coating technology with Eastman's expertise in global packaging markets and technical services.

Eastman Chemical Products, Inc., P.O. Box 431, Kingsport, TN 37662

Circle 225

12TH ANNUAL NEW FOOD PLANT CONSTRUCTION

Food plant construction continues at a record pace for the fifth consecutive year. Take a look inside at who's building what, where and when.



Food Engineering's 12th annual new plant survey shows that the food industry construction boom is continuing with a record 390 projects being built, up from 369 reported last year. Results were compiled from a *Food Engineering* survey and data from Conway Data, Inc., Norcross of GA.

Approximately 193 or 49.5 percent of the projects are new construction, something of a decline compared to last year's 58 percent. However, compared to prior surveys, it is right on the norm.

Forty distribution centers were built, following a steady tack from last year's 35. Many of the distribution center/warehouses are freezer/refrigerated facilities illustrating that frozen food remains a powerful category. In addition, the upsurge in refrigerated and prepared fresh foods account for much of the refrigerated warehouse construction.

Cholesterol and calorie concerns are being addressed once again by the amount of poultry processing plants being built—31. Still, activity continues to sizzle in the meat sector with the construction of 29 meat processing plants, up slightly from 27 last year. Meat plant construction in '88 and '89 was a dramatic departure from 1987 when only eleven red meat plants were built. This reinforces perceptions that the decline in demand for red meat has stabilized.

Pork "the other white meat" kept up with last year's trend with construction of three

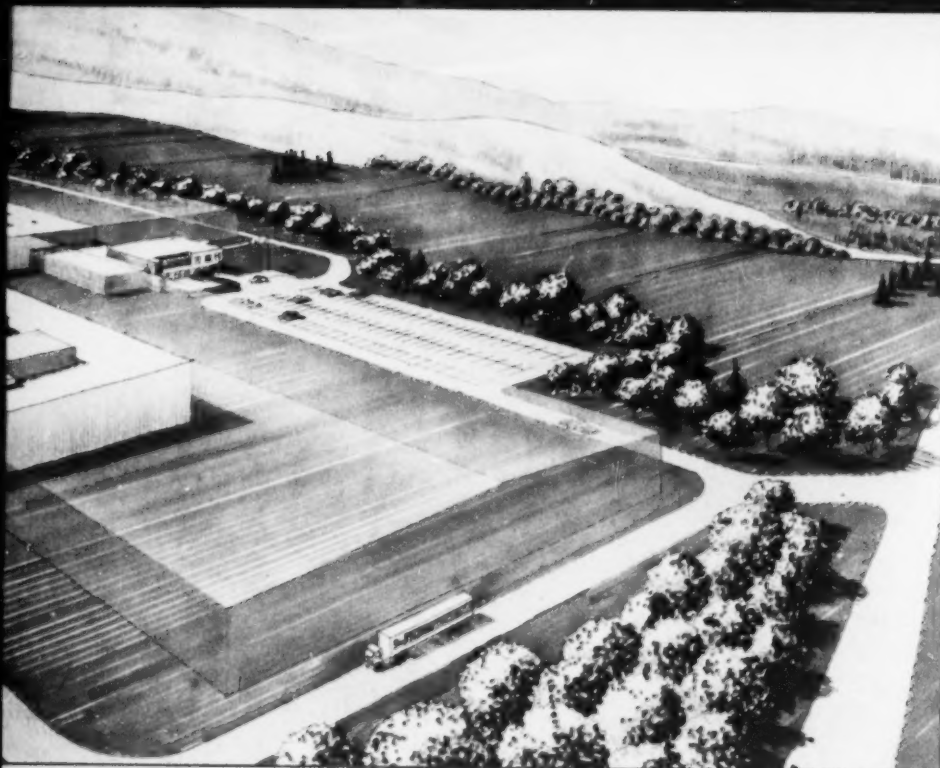
pork plants, one ham processing and one hog slaughterhouse. However, this has not been interpreted as good news by everyone within the pork packing industry.

Joseph W. Luter, III, chairman, president and chief executive officer of Smithfield Foods, Inc., said in the company's 1989 annual report, "Recent moves by several major players in the pork packing industry indicate that they are determined to increase their market share by significantly increasing their slaughtering capabilities in an industry which is already plagued by plant overcapacity. These actions by those companies will further pressure the weaker players in the industry and may result in a new round of plant closings and further consolidation of the industry. As a corollary to this scenario, we believe that fresh meat margins, which have been under pressure during our last fiscal year, will continue under pressure for the foreseeable future and that the short-term outlook for the industry remains cloudy."

Noteworthy projects that came to our attention after deadline included Nabisco's \$30 million expansion of its cereal plant in Naperville, IL (Sverdrup) and Campbell Soup Co.'s 95,000 sq. ft. expansion in Camden, NJ (The Sigel Group & Ballinger).

In the final column of the following tables, project status and date are coded as follows: Plng. (site selected but construction not yet underway); Const. (construction underway); Comp. (project completed); and Stup. (actual or projected startup dates of new manufacturing plants).

PATRICIA M. DILLON
Senior Associate Editor

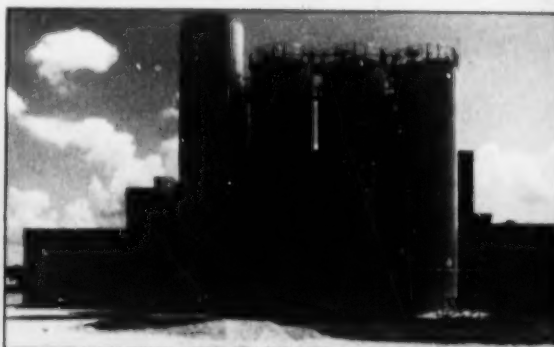


Distribution centers were trendsetters in the survey and Hannaford Bros Co., plans to have a new grocery distribution center built in Schopack, NY in May 1990. (Source: St. Onge, Ruff and Associates, Inc.)

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
A								
Advance Meat Co.	Enid, OK	Breaded meats	Exp.	—	—	150	—	Comp.
Advantage Food Prods.	Petersburg, WV	Poultry proc.	New	—	1.1	280	—	Comp.
Aero-Span Feeders, Ltd.	Hereford, TX	Grain sorghum	New	20	.50	—	—	Const.
Alabama Feed Products	Cullman, AL	Pet food	Exp.	15	5.2	13	—	Const.
Albertson's, Inc.	Brea, CA	Groc. dist.	Exp.	345	12.7	35	A. Epstein & Sons Inc.	Comp. 5/89
Albertson's, Inc.	Brea, CA	Meat & deli warehouse	Renov.	24	—	—	A. Epstein & Sons Inc.	Comp. 12/88
Albertson's, Inc.	Roseville, CA	Grocery & prod. dist.	New	278	18.3	40	A. Epstein & Sons Inc.	Comp. 9/89
Albertson's, Inc.	Boise, ID	Sundries ctr.	Exp.	54	—	—	A. Epstein & Sons Inc.	—
Albertson's, Inc.	Gresham, OR	Distribution ctr.	New	551	23.5	25	A. Epstein & Sons, Inc.	Comp. 10/88
Albertson's, Inc.	Fort Worth, TX	Distribution ctr.	New	730	30.5	55	A. Epstein & Sons, Inc.	—
Albertson's, Inc.	Salt Lake City, UT	Perishable goods dist.	Exp.	64	4.2	10	A. Epstein & Sons Inc.	Comp. 11/88
Altech	Nicholasville, KY	Yeast	Exp.	—	1.3	15	—	Const.
Alpo Pet Foods	Crete, NE	Pet foods	Exp.	30	2	20	A. Epstein & Sons, Inc.	Const.
Alpo Pet Foods/Jim Dandy Co.	Decatur, AL	Dog food	Exp.	100	2.5	—	—	Const.
Amber Milling-Harvest States	Hammond, IN	Flour	New	—	18	50	—	Plng. 12/90
American Crystal Sugar	Grand Forks, MN	Sweetener	Renov.	—	—	—	C.W. Nofsinger	—
American Fructose Corp.	Dimmitt, TX	Corn syrup	Exp.	—	30	—	—	Plng. '90
American Italian Pasta Co.	Excelsior Springs, MO	Pasta	Exp.	—	10	—	—	Const.
American Maize	Dimmitt, TX	Fructose	Exp.	—	30	—	—	—

NEW FOOD PLANTS

Universal Foods Inc. will have a food drying facility built in Juneau, WI (right). (Source: Building Construction, Inc.) Newly Weds Foods' new \$9 million, highly automated batters and breadings plant (far right) towers above the landscape in Springdale, AR. (Source: Newly Weds Foods, Inc.)



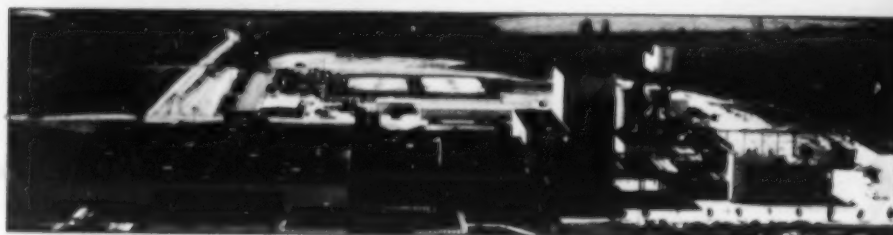
Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
American National Corp.	Ackley, IA	Canned corn	Exp.	—	—	55	—	Plng.
AmeriQual Foods	Evansville, IN	Food proc.	New	50	5.5	100	—	Comp.
Anheuser-Busch Co.	Ft. Collins, CO	Beer	New	780	300	550	MK-Ferguson	Stup. 3/89
Anheuser-Busch Co.	Cartersville, GA	Beer	New	860	250	500	MK-Ferguson	Const. 9/91
Anheuser-Busch Co.	Tampa, FL	Beer	Exp.	47	45	49	Lockwood Greene MK-Ferguson	Stup. '90
Anheuser-Busch Co.	St. Louis, MO	Beer	Exp.	—	259	—	MK-Ferguson	Const.
Anheuser-Busch Co.	Newark, NJ	Beer	Exp.	—	—	—	MK-Ferguson	Comp. '91
Anheuser-Busch Co.	Carrollton, TX	Refrigerated bakery dough	Exp.	27	—	—	Webber/Smith Assoc.	Stup. 11/89
Archer Daniels Midland	Decatur, IL	Biochemicals	New	—	150	—	—	1990
Armour Foods	Louisville, KY	Meat packing	Exp.	—	5	100	—	Comp.
Armour Foods	Springfield, KY	Butter & cheese	Exp.	—	1	5	—	Comp.
ASK Foods	Palmyra, PA	Salads & frozen soups	New	—	2.2	60	Webber/Smith Assoc.	Const. 11/89
ASK Foods	Palmyra, PA	Frozen foods	Exp.	28	2.2	50	—	Plng.
Associated Milk Prod.	Stephenville, TX	Cheese	New	90	20	90	Webber/Smith Assoc.	Stup. 3/89
Atlanta Dairy	Atlanta, GA	Dairy	Exp./Renov.	—	—	—	Hixson	Stup. '90
Atlantic Food Services	Manassas, VA	Food dist.	Exp.	31	—	—	St. Onge, Ruff	Stup. 12/90
ATP	Albertville, AL	Mold inhibitors	New	18	1.5	37	—	Comp.
Azteca Milling Co.	Plainview, TX	Corn flour	New	—	14	150	—	Plng.

B

Bahlsen	Cary, NC	Cookies & crackers	Exp.	358	45	250	—	Comp.
Baltimore Quality Assurance	Baltimore, MD	Spice proc.	New	163	3.7	—	—	Comp.
BCM Food Processing	Muskogee, OK	Boneless chicken	New	7	—	68	—	Const.
Beef Nebraska	Omaha, NE	Meat proc.	Exp.	—	3	50	—	Const.
Bellingham Baking Co.	Bellingham, WA	Bakery prod.	New	22	2	12	—	Plng.
Berry Veal Products	Luzerne, PA	Veal prod.	New	10	1.5	50	—	Plng.
Best Foods	Asheboro, NC	Soup/sauces	New	141	—	130	Fluor Daniel	Stup. 10/88
Biggers Bros.	Alcoa, TN	Distribution ctr.	New	190	12	250	Food Plant Engineering	Stup. 12/88
Big Bear	Columbus, OH	Produce	Renov.	80	—	—	Hixson	Stup. '89
Big Bear	Wapakoneta, OH	Grocery dist.	New	500	—	—	Hixson	Stup. '90
Blue Bell Creameries	Broken Arrow, OK	Ice cream	New	146	—	50	—	Comp.
Blue Bell Creameries	Brenham, TX	Ice cream	Exp.	30	6	—	Descorp/FDI	Comp. 6/89
Blue Ribbon Poultry	Birdsboro, PA	Poultry prod.	Exp.	49	1.1	31	—	Plng.

NEW FOOD PLANTS

A plant expansion has been brewing at Folger's Coffee in Sherman, TX. (Source: Fru-Con Engineering.)



Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Coca-Cola Co.	Greenfield, MA	Soft drinks	New	85	2	70	FL Roberts	Prog.
Coca-Cola Co.	Bangor, ME	Soft drinks	Exp.	42	1	5	—	Comp.
Coca-Cola Co.	Findlay, OH	Soft drinks	New	22	—	5	—	Prog.
Coca-Cola Co.	Fl. Worth, TX	Soft drinks	Exp.	51	—	16	—	Comp.
Coca-Cola Co.	Richmond, VA	Soft drinks	New	300	18	75	—	Prog.
Coed Madalch	Paw Paw, WV	Shitake mushrooms	New	—	—	75	—	Comp.
Coldwater Seafood	Everett, MA	Frozen fish	Renov.	23	—	—	Webber/Smith Assoc.	Stup. 3/89
Columbia Yeast	Headland, AL	Bakers yeast	New	20	4.5	25	—	Const.
Columbia Yeast	Bainbridge, FL	Bakers yeast	New	0	4.5	25	—	Const.
ConAgra	Athens, AL	Poultry proc.	Exp.	10	2	200	—	Const.
ConAgra	Fergus Falls, MN	Oat mill	Exp.	—	—	—	—	—
ConAgra	Omaha, NE	Food prod.	New	—	50	430	—	Prog.
ConAgra	Omaha, NE	Food prod.	New	—	12.7	30	—	Const.
ConAgra	S. Sioux City, NE	Oat prod.	New	—	22	30	Younglove	Stup. 7/89
ConAgra	Buffalo, NY	Oat mill	Exp.	—	—	—	—	—
ConAgra Fresh Meats	Amarillo, TX	Beef proc.	New	75	65	250	—	Prog. 7/89
Continental Baking Co.	Memphis, TN	Cakes & breads	Exp.	53	—	—	—	Const.
Corn and Beef Ind.	Lexington, NE	Beef proc.	New	—	3.3	85	—	Const.
Countryside	Lima, OH	Animal feed	New	—	3	25	—	Const.
CPC International	Argo, IL	Dextrose prod.	Exp.	—	—	—	—	Comp. 6/90
Crescent Packaging	Hicksville, NY	Prep. meats	Exp.	10	1.1	40	—	Comp.
Criders of IL	Hutsonville, IL	Chicken	New	—	3.1	301	—	Comp.
Crosfield Chemicals	Joliet, IL	Silica hydrogel	New	4	—	—	—	Comp. 5/89
Crystal Cube Ice Co.	Springfield, MO	Ice	New	—	1.1	15	—	Const.
Crystal Foods	Gaylord, MN	Microwaveable food	Exp.	12	12	175	—	Const.
Crystal Foods	Gaylord, MN	Microwaveable food	New	—	2	—	—	Const.
Cullum Companies	Garland, TX	Distribution ctr.	Renov.	585	—	150	Food Plant Engineering	Stup. 9/88

D

Dairymen's Creamery Co-op	Boise, ID	Ice cream	Exp.	20	—	—	Mead & Hunt Consul. Engrs.	Stup. '89
Darling-Deleware	Omaha, NE	Pet food	New	—	3	36	—	Const.
Dawn Food Products	Crown Point, IN	Bakery prod.	New	54	—	140	—	Comp. 1/90
Dehydration Specialists	Umatilla, OR	Onion dehydration	New	21	20	45	—	Prog. 8/90
Delicious Foods	Grand Island, NE	Onions & mushrooms	Exp.	—	27	190	—	Const.
Del Monte Tropical Fruit Co.	Savannah, GA	Tropical fruit	Renov.	60	—	—	St. Onge, Ruff	Stup. 6/90
Del Monte Tropical Fruit Co.	Port Manatee, FL	Tropical fruit	New	60	—	—	St. Onge, Ruff	Stup. 10/89
Del Monte Tropical Fruit Co.	Camden, NJ	Tropical fruit	Renov.	70	—	—	St. Onge, Ruff	Stup. 10/89

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Dean Foods Co.	Sheboygan, WI	Milk	Exp./Renov.	20	—	—	Hertel, Johnson, Eipper & Stopa	Stup. '89
Dennis Logan	Boardman, OR	French fries	New	—	14	140	—	Ping. 7/90
Dept. of the Army	Annapolis, PA	Food distr.	New	50	—	25	St. Onge, Ruff	—
Desert Valley Date	Coachella, CA	Date proc.	New	26	1.2	—	—	Const.
Dial Meat Purveyors	Dade City, FL	Poultry proc.	Exp.	—	1.5	50	—	Const.
Domino Pizza	Ontario, CA	Dough production	Exp.	15	3	10	A. Epstein & Sons, Inc.	Stup. 6/89
Domisea Farms	Pocatello, ID	Fish prod.	New	30	2	100	—	—
Donell Foods	Dodge, NE	Cheese proc.	New	—	3	30	—	Const.
Double J Bakery	Marysville, PA	Baked goods	New	57	3.3	20	—	Ping.

E

Ermark	Harrisburg, PA	Candy	Exp.	—	10	100	—	Const.
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F

Fairest Foods	Baldwin, WI	Food proc.	New	40	—	—	—	Const. 5/89
Fairfield Farms	Hanover, MD	Frozen foods	New	90	—	—	Webber/Smith Assoc.	Stup. '90
Farr Better Feeds	Clovis, NM	Livestock feeds	New	40	1	36	—	Comp.
Field Packaging	Louisville, KY	Meats	Exp.	—	1.5	—	—	Comp.
Fiesta Trop. Ice Cream	Middletown, NY	Ice cream & frozen prod.	New	15	2	25	—	Ping.
First National Supermarkets	Maple Heights, OH	Produce dist.	Exp.	93	—	—	Webber/Smith Assoc.	Stup. 3/90
Fleischmann's Yeast	Memphis, TN	Yeast	New	50	20	35	—	Ping.
Flourex Flavors	Lakeland, FL	Citrus flavors	Exp.	40	—	22	—	Comp.
Folexco, Inc.	S. Plainfield, NJ	Flavor extracts	New	13	—	—	—	Comp. 12/88
Folgers Coffee	Sherman, TX	Coffee	Exp.	—	—	260	Fru-Con Engineering	1989
Foodways National	Massillon, OH	Frozen foods	Exp.	—	3	50	—	Const.
Fremont Beef Co.	Fremont, NE	Meat Proc.	New	—	10	100	—	Const.
FreshNes Foods Corp.	Solon, OH	Refrig. entrees	Exp.	25	12	30	Lockwood Greene	Stup. '88
Frito Lay	Cucamonga, CA	Salted snacks	Line addit.	—	—	—	Hixson	Stup. '89
Frito Lay	Modesto, CA	Chips & snacks	New	200	20	250	—	Ping. '90
Frito Lay	Frankfurt, IN	Salted snacks	Line addit.	—	—	—	Hixson	Stup. '89
Frito Lay	Louisville, KY	Salted snacks	Line addit.	—	—	—	Hixson	Stup. '89

G

General Foods	Jonesboro, AR	Cereals	Exp.	160	—	60	—	Ping.
General Foods	Tulare, CA	Foods	New	32	—	—	—	Ping.
General Foods	Dover, DE	Stove Top stuffing	Exp.	30	—	—	A. Epstein & Sons, Inc.	Const.
General Foods USA	Jonesboro, AR	Post cereal	New	250	58	30	—	Const.
General Mills	Covington, GA	Breakfast cereals	New	200	100	110	Lockwood Greene	Stup. '89
Gertrude Hawk Candies	Throop, PA	Chocolate candy	New	75	—	50	—	Const.
Giant Food Stores, Inc.	Landover, MD	Produce dist.	Renov.	6	—	—	Webber/Smith Assoc.	1990

NEW FOOD PLANTS

More Park's Sausage will be produced at a new \$13 million plant in Baltimore, MD. It is one of three new pork processing plants reported in the survey. (Source: The Facility Group.)



Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Gillette Dairy	Norfolk, NE	Dairy prod.	Exp.	—	3	30	—	Const.
Gilliam Candy Co.	Paducah, KY	Hard candy	Exp.	—	6	30	—	Ping.
Giister Marylee Corp.	Perryville, MO	Cereal proc.	Exp.	25	2	50	—	Const.
Glenmore Distilleries Co.	Owensboro, KY	Liquor	Exp.	—	3	70	—	Const.
Godchaux Henderson	Reserve, LA	Corn syrup	New	—	55	1,000	—	Ping.
Gold Kist	Crossville, AL	Chicken hatchery	New	30	2.1	42	—	Const. '89
Gold Star Dairy	Clovis, NM	Milk proc.	New	47	5.5	65	—	Comp.
Golden Poultry	Russellville, AL	Poultry	New	—	—	700	—	Const.
Golden Valley Microwave	Mattoon, IL	Popcorn	New	—	10	200	—	Const. '89
Golden West Foods	Bossier City, LA	Frozen food proc.	Exp.	100	5	400	—	Const.
Great Lakes Packing Co.	Bellevue, OH	Meat packaging	New	30	1.8	—	—	Ping.
Great Plains Produce	Eakley, OK	Vegetable proc.	New	—	—	80	—	Comp.
Grtr. Omaha Packaging	Omaha, NE	Meat proc.	Exp.	—	3	35	—	Const.
Green Spring Dairy	Baltimore, MD	Dairy	Exp./Renov.	113	—	170	JAI Engineers	Stup. 11/88
Greenwood Packing	Greenwood, SC	Pork prod.	Exp.	32	—	—	The Stellar Group	Comp. 12/88
Griffin Pie	London, KY	Bakery prod.	Exp.	—	2	40	—	Comp.
Guthrie Sausage	Florence, AL	Proc. meats	New	20	—	10	—	Const.
Gwaltney	Portsmouth, VA	Meat prod.	Exp.	—	.07	80	—	Comp.

H

Hannaford Bros. Co.	Schodak, NY	Grocery dist.	New	430	—	150	St. Onge, Ruff	Stup. 5/90
Heartland Food Prods.	Lenox, IA	Foods	New	—	7	100	—	Ping.
Heartland Quality Foods	N. Sioux City, SD	Pet food	New	70	—	66	—	Const. 10/89
H.J. Heinz Company	Tracy, CA	Tomato paste	Exp.	—	10	40	—	Const. 6/89
Heinz Pet Products	Terminal Island, CA	Pet foods	Exp.	50	15	350	Lockwood Greene	Stup. 11/89
Heinz Pet Products	Bloomsburg, PA	Pet foods	Exp.	35	7.5	450	Lockwood Greene	Stup. '90
Heller Seasonings & Ing.	Bethlehem, PA	Spice proc.	New	34	—	—	—	Comp.
Hercules	Vero Beach, FL	Pectin	Exp.	50	2	—	—	Ping.
Hershey Chocolate USA	Derry Twp., PA	Chocolaie	New	130	100	60	Sverdrup	Comp. '91
Hershey Foods Corp.	Derry Twp., PA	Chocolate	New	—	39	—	—	Ping. '91
Hershey Foods Corp.	Derry Twp., PA	Chocolate	New	255	—	—	Ballanger Co.	Ping. '91
Hershey Pasta Group	Omaha, NE	Pasta prod.	Exp.	—	20	—	—	Const.
Hill's Pet Products	Richmond, IN	Pet food proc.	New	204	66	250	A. Epstein & Sons, Inc.	Stup. 7/89
Hilmar Cheese	Hilmar, CA	Cheese	Exp.	27	—	—	Mead & Hunt Consul. Engrs.	Stup. '90
Hiram Walker & Sons	FL Smith, AR	Liqueurs	Exp.	—	2	30	—	Const.
Hogue Cellars	Prosser, WA	Wines	New	—	1.3	—	Knipper Dunn Franklin	Comp.
Holland Daily Fresh	Mt. Carmel, PA	Tomatoes	New	—	16	150	—	Const. 8/89

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Honey Hill Farms	Sacramento, CA	Frozen yogurt	Exp.	8	3	—	Descorp/FDI	Comp. 3/89
H.P. Hood Products	Syracuse, NY	Cultured prod.	Exp./Renov.	—	—	—	Hixson	Stup. '90
Geo. A. Hormel & Co.	Austin, MN	Food packaging	Exp.	40	—	—	—	Ping. 12/89
Hudson Foods	Hope, AR	Chicken proc.	Exp.	—	—	150	—	Const. '89
Hudson Foods	Springfield, MO	Prep. turkey prod.	Exp.	85	4.5	200	—	Const. '89

I

Indian River Foods	Ft. Pierce, FL	Citrus juices	Exp.	300	15	30	—	Ping.
Ingomar Packing Plant	Volta, CA	Tomato proc.	New	—	20	—	—	Ping.
Innovative Pork Concepts	Delphi, IN	Pork prod.	New	300	—	250	—	Comp. '90
Iowa Beef Processors	Dakota City, NE	Meat proc.	Exp.	—	10	100	—	Const.
Iowa Beef Processors	Lexington, NE	Beef slaughter/proc.	New	—	77	1,200	—	Ping.
Iowa Beef Processors	Madison, NE	Meat proc.	Exp.	—	20	150	—	Const.
Iowa Ham Processors	Delwein, IA	Ham proc.	Exp.	29	1	50	—	Ping.

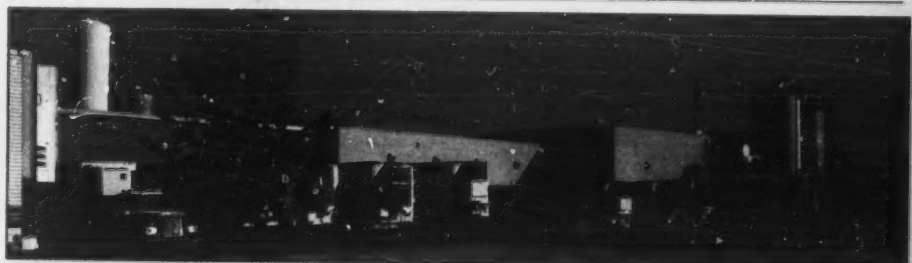
J

James Skinner Co.	Omaha, NE	Baked goods	Exp.	—	4.6	87	—	Const.
Jerome Foods	Faribault, MN	Turkey	Exp.	30	4.3	—	—	Ping.
Jim Beam Brands Co.	Clermont, KY	Distilled spirits	Exp.	—	1.3	—	—	Comp.
Johnsonville Foods	Marshalltown, IA	Hog slaughter/proc.	New	50	2.5	50	—	Ping.
Jolly Rancher	Wheat Ridge, CO	Candy	Exp.	—	7	—	—	Ping.
Jordan's Mezt	Portland, ME	Processed meats	Exp.	20	2.2	10	—	Comp.

K

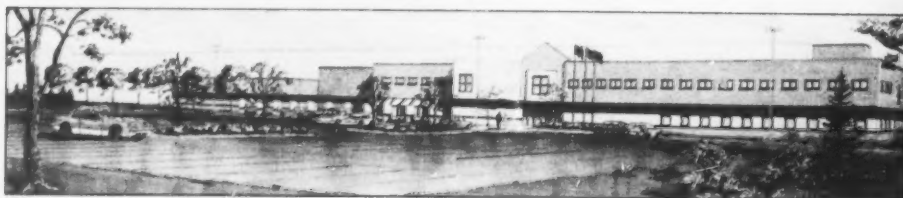
Kagome	Los Banos, CA	Catsup & juices	New	90	17	40	—	Const.
Keebler Company	Denver, CO	Distribution	Exp.	45	6	—	A. Epstein & Sons, Inc.	Stup. 7/89
Keebler Company	Alsip, IL	Distribution	Exp.	43	2.5	10	A. Epstein & Sons, Inc.	Stup. 5/89
Keebler Company	Oakfield, NY	Cookies	New	39	1.8	3	—	Const.
Kellogg Company	Battle Creek, MI	Cereals	New	—	—	—	Fluor Daniel	—
Kellogg Company	Omaha, NE	Cereals	New	—	20	—	—	Comp.
Kellogg Company	Memphis, TN	Cereals	New	—	1.2 (bil.)	1,000	—	Stup. '91
Keystone Foods Corp.	Gadsden, AL	McDonald's food	New	64	9.8	100	Michael J. Lynn	Comp.
Kidd & Company	Henderson, NV	Marshmallows	New	120	—	100	—	Const. 4/89
Kitchens of the Ocean	Riviera Beach, FL	Fish proc.	New	20	—	—	—	Ping.
Kraft	Tampa, FL	Food prod.	New	133	10	193	—	Const.
Kraft	North Lawrence, NY	Cultured prod.	Exp./Renov.	85	—	—	Hixson	Stup. '89/'90
Kraft Foodservice Group	Garland, TX	Food serv. dist.	Exp.	206	—	—	—	Const.
Kroger	Cincinnati, OH	Frozen baked goods	Renov.	26	—	—	Hixson	Stup. '88
KW, Inc.	Londonderry, NH	Coca Cola bottler	New	170	5	—	—	Ping.

Dean Foods will expand its Sheboygan, WI milk plant by 20,000 square feet. (Source: Hertel, Johnson, Elpper & Stops.)



NEW FOOD PLANTS

A new 230,000 sq. ft. distribution center for Progressive Distributors Inc. was started up in Winthrop, ME. (Source: St. Onge, Ruff & Associates, Inc.)



Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
L								
La Fronteriza	Toledo, OH	Tortilla chips	New	—	1	33	—	Const.
LaLoma Foods	San Bernadino, CA	Food prod.	Renov.	65	8	60	Davy McKee	Stup. '90
Leaf	Wheat Ridge, CO	Candy	Exp.	10	10	75	—	Const.
Leprino Foods	Allendale, MI	Mozzarella cheese	New	200	—	—	Mead & Hunt Consul. Engrs.	Stup. '89
Lindt & Sprungli Co.	Stratham, NH	Candy	New	100	—	100	—	Const. '89
Long Beverage	Morrisville, NC	Beverages	New	40	1.1	—	—	Comp.
Longmont Foods	Longmont, CO	Food proc.	New	—	4.2	50	—	Const.
Louis Dreyfus	New Madrid, MO	Rice	New	—	4.8	50	—	Plng.
Louis Rich & Co.	Dresden, MO	Turkey proc.	New	—	50	700	—	Const.
Louis Rich & Co.	Sedalia, MO	Sandwich meats	New	—	50	700	—	Const.
Louis Rich & Co.	Sedalia, MO	Turkey/food	New	—	100	1,000	—	Const.
Louisville EOP	Louisville, KY	Vegetable oil	Exp.	—	—	70	—	Plng.
Lynks Seeds	Marshalltown, IA	Seed proc.	Exp.	—	7	5	—	Plng.
M								
Mama D'Angelo	Salt Lake City, UT	Pizza	New	—	—	—	—	Const.
Martha White Foods	Jackson, TN	Flour & cornmeal	Exp.	147	2	—	—	Plng.
William E. Martin & Sons	Jamaica, NY	Spice proc.	New	50	—	—	—	Comp.
Maruchan Virginia Inc.	Chesterfield Cty., VA	Oriental noodles	New	160	10	40	Kajima Int'l	Plng. '90
Mazza Cheese Co.	Sumner, WA	Cheese	New	70	—	—	Niro Atomizer/ Shambaugh & Sons	—
McIlhenny Co.	New Iberia, LA	Tabasco sauce	Exp.	—	—	60	—	Const.
McKee Baking Co.	Stuarts Draft, VA	Snack cakes	New	—	—	500	Fluor Daniel	Stup. 1/90
Meat Producers Assn.	Okeechobee Cty, FL	Meat packing	New	15	2	80	—	Const.
Meijer, Inc.	Grand Rapids, MI	Distribution ctr.	New	800	—	250	Food Plant Engineering	Stup. 7/89
Meijer, Inc.	Lansing, MI	Produce dist.	Renov.	40	—	—	Webber/Smith Assoc., Inc.	1989
Merchandise Warehouse Co.	Indianapolis, IN	Frozen food storage	New	118	—	—	Webber/Smith Assoc., Inc.	Stup. 2/90
Merchants Refrigeration	Chester, NY	Frozen food dist.	New	90	5	40	—	Const.
Mesa Food Products	Louisville, KY	Tortillas	Exp.	—	1.2	20	—	Const. 12/89
Metz Baking	Omaha, NE	Bakery goods	Exp.	—	17	100	—	Const.
Midlantic Distribution	Dayton, NJ	Food dist.	New	211	—	—	—	Comp.
Milico	Asheville, NC	Milk prod. & juices	Exp.	12	1.5	—	—	Comp.
Millard Refrigeration	Omaha, NE	Meat proc.	Exp.	—	3	30	—	Const.
Miller Brands	Denver, CO	Beer	New	150	3.3	—	—	Plng.
Miller Brewing Co.	Milwaukee, WI	Beer	Exp.	—	26	—	—	Comp.
Milton G. Waldbaum Co.	Wakefield, NE	Eggs	Exp.	—	17	106	—	Const.
Minn-Dak Yeast Co.	Wahpeton, ND	Yeast	New	—	10	—	—	Const. '90
L.J. Minor Corp.	Celina, OH	Food proc.	Exp.	—	—	75	—	Plng.

NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Monfort Packing	Dumas, TX	Protein gelatin	Exp.	—	4	—	—	Ping.
Monfort Pork	St. Joseph, MO	Hog by-products	Exp.	—	10	135	—	Const.
Mt. Olive Pickle Co.	Mt. Olive, NC	Pickles & relishes	Exp.	52	1	—	—	Const.
Mrs. Smith's Frozen Foods	Rossville, TN	Frozen waffles	Exp.	80	—	—	Webber/Smith Assoc., inc.	Stup. 1/90

N

Nabisco	Naperville, IL	Cereals	Exp.	—	30	—	Sverdrup	Stup. 8/89
National Oats Co.	Cedar Rapids, IA	Cereals	Exp.	—	12	—	—	—
National Starch	—	Starch	Exp.	—	3	—	C.W. Nofsinger	—
Nebraska DUPACO	Omaha, NE	Meat proc.	Exp.	—	12.5	130	—	Const.
Nehi-Royal Crown	Bowling Green, KY	Soft drinks	Exp.	—	2.5	51	—	Ping.
Nestle Enterprises	St. Joseph, MO	Pet foods	Exp.	—	—	200	—	Const.
Nestle Foods Corp.	Milledgeville, GA	Chocolate	Renov.	348	—	—	Webber/Smith Assoc., inc.	Stup. '90
Nestle Foods Corp.	Granite City, IL	Food prep.	Exp.	—	1.3	—	—	Const.
Newly Weds Foods	Springdale, AR	Breading prod.	—	—	9	—	—	—
Niagara Candy & Ice Cream	Cheektowaga, NY	Candy & ice cream	Exp.	58	2.4	36	—	Const.
NORPAC Foods, Inc.	Hermiston, OR	Food proc.	New	90	9	240	—	Const. 4/90
N. Star Foods	W. Union, IA	Turkey proc.	New	—	1.1	80	—	Ping.
Nottawa Gardens W.	Cordell, OK	Poultry proc.	New	—	—	240	—	Const.
NutraSweet	Manteno, IL	Artificial sweetener	New	70	12	120	Sverdrup	Stup. 6/90
NutraSweet	Augusta, GA	NutraSweet mfr.	New	—	—	—	—	1991

O

Oakhurst Dairy	Portland, ME	Milk	Exp.	6	4	—	Descorp/FDI	Comp. 7/89
Ocean Spray Cranberries	Vero Beach, FL	Citrus juices	Exp.	100	15	—	—	Const.
Ocean Spray Cranberries	Sulphur Springs, TX	Cranberry juice	Exp.	70	1	—	—	Const. 8/89
Ocean Spray Cranberries	Tomah, WI	Freezer dist.	New	121	—	—	The Stellar Group	Comp. 9/89
Odor Sausage	Nashville, TN	Sandwiches	New	50	2	45	—	Ping.
Old Europe Cheese	Benton Harbor, MI	Cheese	New	—	1.7	30	—	Comp.
Old Watchitoches Meat	Logansport, LA	Meat pies	New	40	—	200	—	Comp.
Omaha Steaks Int'l	Omaha, NE	Packaged meats	Exp.	—	17.5	179	—	Const.

P

Palmetto Baking Co.	Orangeburg, SC	Bakery prod.	Exp.	20	.20	—	—	Comp.
Pandelus Seafood	Sanford, FL	Shrimp proc.	New	—	—	100	—	Const.
Panhandle Catfish	Blountstown, FL	Proc. plant	Exp.	12	.40	108	—	Ping.
Park Foods	Canton, OH	Chicken	Exp.	—	13.7	—	—	Ping.
Parks Sausages Co.	Baltimore, MD	Pork prod.	New	133	13	200	Facility Eng.	Stup. 1/90
Pegler Sysco Food Svc.	Lincoln, NE	Whsl. food	Exp.	—	4	167	—	Const.
Pepperidge Farm	Adamstown, PA	Bakery prod.	New	600	180	600	Day & Zimmerman	Stup. 1991
Pepsi-Cola Co.	Riverside, CA	Soft drinks	New	—	26	—	—	Ping.
Pepsi-Cola Bottling Co.	Columbus, OH	Soft drinks	Exp.	54	—	—	—	Ping.
Pepsi-Cola Co.	Riverside, CA	Soft drinks	New	200	26	300	H.F. Thompson	Ping.
Pheasant Concepts	Sedalia, MO	Pheasant proc.	New	28	3.5	100	—	Ping.

NEW FOOD PLANTS

Construction will begin in January on a new Rocco Turkey's processing plant in St. Pauls, NC. (Source: Shillington & Associates.)



Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Piknik Products	Montgomery, AL	Condiments	Exp.	27	—	20	—	Const. 3/89
Pilgrim's Pride	DeQueen, AR	Chicken proc.	Exp.	—	1.5	50	—	Const.
Plains Co-op Oil Mill	Lubbock, TX	Crushed cottonseed	Exp.	7	4	—	—	Const.
Planters-Life Savers Co.	Holland, MI	Confections	Renov.	15	2	30	Lockwood Greene	Stup. 3/89
Planters-Life Savers Co.	Holland, MI	Confections warehouse	Exp.	26	0.75	—	Lockwood Greene	Stup. 12/88
Planters-Life Savers Co.	Winston-Salem, NC	Candy, gum & peanuts	New	—	—	50	—	Comp.
Planters-Life Savers Co.	Suffolk, VA	Nuts & candy	Exp.	450	138	—	—	Const.
Plumrose	Booneville, MS	Meat prod.	Exp.	—	3.1	150	—	Comp.
Prairie Farms Dairy	Peoria, IL	Dairy prod.	Exp.	9	1	—	—	Ping.
Progressive Distributors	Winthrop, ME	Distribution ctr.	New	230	—	200	St. Onge, Ruff	Stup. 10/89
Publix Super Markets	Lakeland, FL	Bakery	Exp.	100	—	—	—	Const.
PYA Monarch	Apopka, FL	Foodservice dist.	Exp.	2.2	—	—	Setler, Leach & Lindstrom	Comp. 7/88

Q

Quaker Oats	Kankakee, IL	Cereal	Exp.	—	10	50	—	Const.
Quaker Oats	Mountaintop, PA	Gatorade	Exp.	150	—	40	—	Ping. '90
Quaker Oats	Dallas, TX	Gatorade	Exp.	200	—	80	—	Comp.
Quick Candy Co.	Marion, KY	Candy	New	—	2.8	200	—	Comp.
Quik 'N Taste	Belton, MO	Proc. food	New	—	8	208	—	Comp.
Quick Trip								

R

Richland Foods	London, KY	Cookies	New	128	8	450	—	Const. 2/90
Richland Turkeys	Olney, IL	Turkeys	New	—	1	94	—	Const.
RJR Nabisco	Garner, NC	Baked snacks	New	1,100	400	650	Bechtel Nat'l	Ping.
Rocco Turkeys	St. Pauls, NC	Turkey proc.	New	147	—	—	Shillington & Associates	Stup. 1/90
Rogers Brothers	Nampa, ID	Vegetables	New	33	2	28	—	Const. '90
B C Rogers Feed Mill	Morton, MS	Proc. poultry	Exp.	—	.50	100	—	Comp.
B C Rogers Processors	Forest, MS	Proc. poultry	Exp.	—	1.5	40	—	Comp.
Rotella's Italian	Omaha, NE	Bakery prod.	Exp.	—	5.5	30	—	Const.
Roxford Foods	Fresno, CA	Turkey proc.	New	146	—	200	—	Comp.
Russell Stover Candies	Wildwood, FL	Candy dist.	New	45	.70	30	—	Ping.
Rutter Dairy	York, PA	Milk	Exp.	5	3	—	Descorp/FDI	Stup. 11/89

S

Saddle Creek Corp.	Lakeland, FL	Food warehouse	Exp.	200	—	—	—	Ping.
Sara Lee	Winston-Salem, NC	Food dist.	New	600	22	300	—	Const.

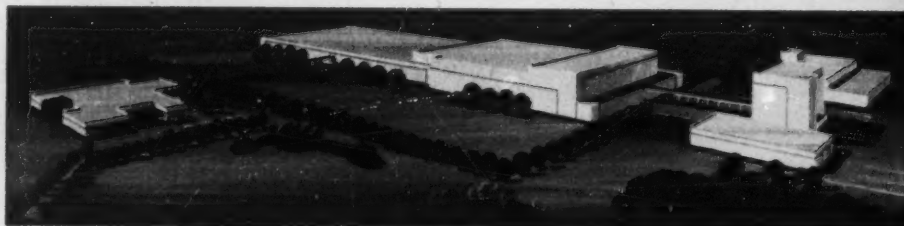
NEW FOOD PLANTS

Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Schenley Distillers	Louisville, KY	Distilled spirits	Exp.	—	3.2	75	—	Comp. 2/89
Scrivner, Inc.	Peoria, IL	Frozen food dist.	Exp.	28	—	—	Webber/Smith Assoc., Inc.	Stup. '90
Seaboard Farms	Athens, GA	Chicken proc.	Exp.	110	16	—	—	Comp. 4/89
Seaboard Farms	Mayfield, KY	Poultry feed	New	—	—	—	Younglove	Comp. 9/90
Select Cheese Co.	Turlock, CA	Cheese	New	22	2	30	—	Ping.
Seneca Corp.	Othello, WA	Juice proc.	New	28	4	35	Food Plant Engineering	Stup. 9/88
Shade Foods	Kansas City, KS	Chocolate	New	—	8	170	—	Const. 11/89
Shade Pasta	Fremont, NE	No-boil pasta	New	—	12	100	—	Const.
Shade Pasta	Fremont, NE	Food proc.	New	29	—	14	—	Comp.
Shellfish Seafoods	Princess Anne, MD	Clam proc.	New	27	—	100	—	Const. '89
Shenandoah's Pride	Mt. Crawford, VA	Dairy & UHT milk	New	109	—	140	JAI Engineers	Stup. 12/88
Signature Foods	Omaha, NE	Ground beef proc.	Exp.	—	3.1	30	—	Const.
Sims Brothers Seafood	Delcambre, LA	Shrimp	Exp.	—	—	30	—	Ping.
Smith's Dairy Prod.	Orville, OH	Ice cream	Exp.	15	4	—	Descorp/FDI	Comp. 8/89
Smith Stores	Layton, UT	Ice cream	New	155	—	—	Webber/Smith Assoc., Inc.	Stup. '90
Southern MN Sugar Beet Co-op	Renville, MN	Molasses desugarization	Exp.	—	18	—	—	Ping. '90
Southwestern Premier	Anadarko, OK	Peanut butter	New	—	—	17	—	Ping.
Spicecraft, Inc.	Gerald, MO	Spices	Exp.	22	—	—	—	Comp. 9/89
A.E. Staley Mfg.	—	Dextrose	Exp.	—	10	—	C.W. Nofsinger	—
Stokely USA	DeForest, WI	Veg. proc./canner	New	260	3	—	—	Const.
Sugar Foods Corp.	Lawrenceville, GA	Sweet 'N Low	New	86	—	50	—	Ping.
Sun Fresh Foods	Mesa, AZ	Prep. salads	New	37	—	—	—	Const.
Sun-Husker Foods	Lincoln, NE	Meat proc.	Exp.	—	10	100	—	Const.
Superior Cake	Southbridge, MA	Pastries	Exp.	20	—	30	—	Const.
Sweet Thanks Candy	Woods Cross, UT	Candy	Exp.	—	—	100	—	Ping.
Swenson Brothers, Inc.	Eugene, OR	Frozen pizza	New	21	2	50	—	Const.
Swift & Eckrich	Omaha, NE	Meat proc.	Exp.	—	10	100	—	Const.
SYSCO Corp.	Jacksonville, FL	Foodservice dist.	New	115	4.7	—	Settler, Leach & Lindstrom	Comp. 2/89
SYSCO Corp.	Miami, FL	Foodservice dist.	New	95	4.8	—	Settler, Leach & Lindstrom	Comp. 5/89
SYSCO Corp.	Orlando, FL	Foodservice dist.	Exp.	48	2.1	—	Settler, Leach & Lindstrom	Const.
SYSCO Corp.	Atlanta, GA	Foodservice dist.	Exp.	100	3	—	Settler, Leach & Lindstrom	Comp. 5/89

T

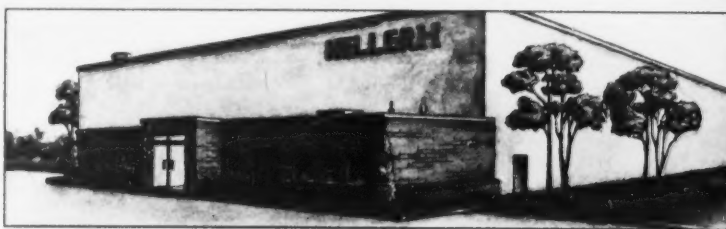
Townsend Foods	Hummels Wharf, PA	Poultry	New	—	—	400	—	Ping.
Triple T Foods	Springdale, AR	Dog food	Exp.	—	1	—	—	Const.
Tri-Valley Growers	Gridley, CA	Fruit proc.	Exp.	—	10	—	—	Ping.

General Mills' 350,000 sq. ft. cereal manufacturing facility in Covington, GA will serve as the flagship operation. (Source: Lockwood Greene Engineers.)



NEW FOOD PLANTS

A new spice processing plant has recently been completed in Bethlehem, PA for Heller Seasonings & Ingredients (Source: Heller Seasonings & Ingredients).



Company	Plant Location	Primary Product	Type Project	M Sq. Ft.	Est. Cost (\$ millions)	Employees	Architects/Engineers	Status & Date
Turkey Hill Dairy	Conestoga, PA	Milk & ice cream	Exp.	138	—	135	JAI Engineers	Stup. 1/90
Turner Dairies	Fulton, KY	Milk & ice cream	Exp.	—	1	—	—	Const.
Tyson Foods	Albertville, AL	Poultry	Exp.	—	1	15	—	Comp.
Tyson Foods	Gadsden, AL	Food proc.	Exp.	—	—	350	—	Const.
Tyson Foods	Berryville, AR	Poultry proc.	New	—	11	170	—	Ping.
Tyson Foods	Grannis, AR	Poultry proc.	New	—	21.6	700	—	Ping.
Tyson Foods	Springdale, AR	Food prod.	New	—	—	300	—	Ping.
Tyson Foods	Rogers, AR	Deboning & proc.	New	—	1.5	35	—	Ping.

U

Wm. Underwood	Hannibal, MO	Soup	Exp.	35	5	40	—	Const.
Universal Foods Corp.	Juneau, WI	Food drying	—	—	.721	—	—	—
Universal Frzn. Novelty Co.	Omaha, NE	Ice cream	Exp.	—	9.2	120	—	Const.
Utz Quality Foods	St. Charles, MO	Distribution center	New	40	—	—	—	Const.

V

Valley Foods	Cumberland Cty., NC	Chicken/turkey proc.	New	13	—	127	—	Ping.
Valley Grain Prods.	Henderson, KY	Corn flour	New	—	10	50	—	Ping.
Victoria Sweets	Ventura, CA	Cookies	New	35	7.5	50	Davy McKee	Stup. '91
Visic Foods	Farmington Hills, MI	Condiments	New	80	—	320	Siegall/Tuomaala	Const.
Vogel Popcorn	Hamburg, IA	Popcorn	Exp.	—	23	100	—	Ping.

W

Wakefern Food Corp.	Elizabeth, NJ	Groc. dist.	New	250	—	300	St. Onge, Ruff	Stup. 10/89
Water Technologies	Knoxville, TN	Bottled water	New	—	—	150	—	Comp.
Wegmans Food Mkts.	Rochester, NY	Frozen food dist.	New	100	50	—	St. Onge, Ruff	Comp. '90
Western Illinois Foods	Monmouth, IL	Foods	New	—	4.4	67	—	Comp.
Winters Candy Co.	Manteno, IL	Candy	Exp.	25	1.5	100	—	Const.
Wisconsin Dairies Co-op	Clayton, WI	Italian cheese	Exp.	2	—	—	Mead & Hunt Consul. Engrs.	Stup. '88
Wisconsin Dairies Co-op	Reedsburg, WI	Butter, milk	Exp.	4	—	—	Mead & Hunt Consul. Engrs.	Stup. '89
Wolfgang Candy	York, PA	Candy	Exp.	29	1.1	85	D.R. Delisle	—
Worthington Foods	Zanesville, OH	Egg substitute prod.	New	135	.700	—	Lockwood Greene	Stup. 1/90

Z

Zacky Farms	Traver, CA	Poultry feed	New	—	—	—	Younglove	Comp. 11/90
Zephyrhills Bottled Water	Zephyrhills, FL	Bottled water	Exp.	105	5	25	—	Const.

COSTING PROJECTS

JUSTIFYING CAPITAL COSTS TO BETTER COMPETE

Justifying the cost of a capital project means presenting it in terms that management understands: ROI, NPV, IRR, and hurdle rate.

Ultimately, wealth must be created by the imaginative and intelligent management of assets, not by devising novel financing and ownership arrangements for those assets." — Professor Robert S. Kaplan, Harvard Business School, *Harvard Business Review*, July/Aug. 1984.

With mergers, acquisitions, "restructurings," leveraged buyouts and junk bonds rampant in today's corporate jungle, many executives seem to have forgotten—or ignored—this principle. "It is hard to imagine that a focus on creating wealth through the rearrangement of ownership claims rather than on managing tangible and intangible assets more effectively will help companies survive as world-class competitors," Kaplan also noted.

Effectively managing assets to build long-term value and compete in today's global market includes a well-planned and economically justified capital-spending program.

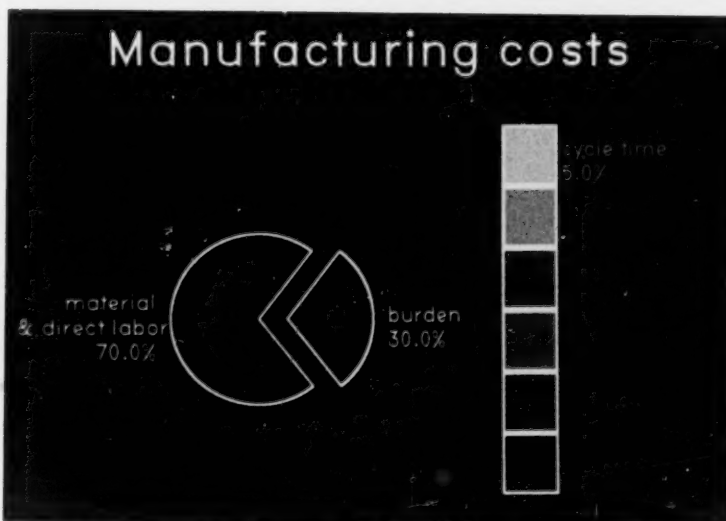
But how does management determine priorities? And how does the corporate engineer or plant manager justify to corporate management the capital spending needed to upgrade a plant or a production line, especially when he's competing with other projects for limited funds?

Estimating costs, savings

William D. Weaver, food processing group manager at Rust International (Birmingham, AL) and former group manager of process/mechanical engineering at Ralston Purina Co., listed three types of capital projects at the American Society of Bakery Engineers (ASBE) meeting on March 8 in Chicago:

- 1) *Mandatory projects* which must be car-

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Midwest Editor



ried out to remain in business e.g. to meet air or wastewater regulations.

- 2) *Business-sustaining projects*, such as replacing worn equipment or projects needed to meet competitive pressures.

- 3) *Cost-justified projects*, which require an acceptable rate of return on the investment and usually involve an expansion of assets. Examples: projects which increase capacity on an existing product line, or needed to manufacture new products.

Quantifying the advantages of a capital project requires three essential elements, Weaver continued: 1) estimating capital costs; 2) determining benefits; and 3) quantifying returns.

Estimating the capital cost requires some degree of engineering, depending on the accuracy required. The first stage generally requires accuracy within 20 percent, sufficient if the ROI is high (more than 30 percent). But if return is marginal or other projects are competing for funds, engineering to an

All cost savings, direct and indirect, should be considered when justifying the cost of a capital project. When justifying CIM, however, savings are difficult to quantify until after the system is installed and operating. (Source: The Foxboro Co.)

COSTING PROJECTS

accuracy of 10 percent may be required. "You should know what management will accept when requesting project approval," Weaver advised.

Benefits to be derived from the project must be determined for an ROI analysis. Earnings and savings can come from many sources, Weaver pointed out. Added capacity, for example, can generate income through added sales and faster production rates. Direct costs should be studied for potential operating savings in labor, ingredients and supplies. Indirect costs such as maintenance, sanitation management and insurance may also be impacted. Possible increases in direct and indirect costs should also be studied. The capital cost of support facilities such as laboratories, offices and parking lots is often overlooked.

Quantifying ROI

Once capital cost and the benefits to be derived from it have been determined, return on investment must be calculated.

First step: Understand how management views money, advised Vincent S. Botto, manager of facilities planning for Campbell Taggart, Inc., at the Food Plants/88 conference conducted last fall by Food Plant Strategies, Inc. at Lincolnshire, IL. This means understanding how the value of money changes with time and interest.

Weaver stressed the same theme at the ASBE meeting. "Quantifying the return is necessary to make decisions that maximize the value of the company," he added.

Weaver outlined three methods of quantifying ROI (see sidebar): 1) simple payback; 2) net present value (NPV); and 3) internal rate of return (IRR).

Botto presented similar formulas for calculating both NPV and IRR. "Management will want to maximize the amount of return on a given project, therefore those with the highest IRR will be viewed as most favorable," he added. Botto defined IRR as "the rate at which the money is discounted so that the present value of the project equals the initial investment."

Management's target IRR is known as the *hurdle rate*—the interest the company could earn on low-risk investments, Botto continued. If IRR on a project is only 4 percent, for example, and the company can earn 10 percent by investing the requested capital in a long-term bond, the project would probably be rejected.

Preparing the proposal

In preparing project documents, it's important to know what direction the proposal

will take—whether it's going to be for a replacement item to maintain present operations, or for a new piece of equipment to enhance operations, said Botto.

The replacement project: Replacing worn equipment is justified when in management's opinion the product manufactured on a given line is consistent with long-range corporate objectives, and when avoided repair costs offer a satisfactory ROI. Replacement is also justified when old equipment cannot be repaired due to obsolescence of its parts. Information needed:

- age and condition of the existing equipment, including detail on its deterioration and impact on operations.
- maintenance and downtime history.
- technology obsolescence, and why repair should be avoided.
- factors which caused equipment failure, and the impact on operations of equipment failure.

With this information, Botto continued, project documentation can be prepared along the following guidelines:

Current situation, including the description of the equipment, and the amount of sales and profit the existing line contributes to the company.

Proposed actions, describing in detail what you intend to do and what pieces of equipment will be replaced. Associated equipment should be considered. Example: If a packaging machine is going to be replaced, will the infeed and discharge conveyors also need replacement?

Justification, a summary of the additional maintenance costs required by the existing equipment, and expenses that can be avoided with the new equipment. Caution: If maintenance savings are claimed, they must be obtainable. Even new equipment has maintenance costs.

The cost-reduction or operational-enhancement project: These include projects which will result in labor savings, material savings, cripple reduction, utility savings, reduced distribution costs and reduced administrative costs. Key: results must be verifiable. All savings should be included. "So many times we look at the direct costs of a project and overlook the indirect and administrative cost savings that will be enjoyed," Botto observed. Project documents are prepared along similar guidelines:

Current situation details the equipment being used and its impact on line operations.

Proposed actions can be very succinct; e.g. reducing labor costs by a given amount.

Justification tells management how the project will impact the company and capital

Methods of Quantifying ROR

1. **SIMPLE PAYBACK:** number of years required to recover the investment. Example: cash flow (after tax, profit, and depreciation) of two mutually exclusive projects each costing \$10,000:

Year	Project A	Project B
1	\$5,000	\$1,000
2	4,000	2,000
3	1,000	3,000
4	1,000	4,000
5	1,000	5,000

Project A offers a three-year payback on its original cost; Project B offers a four-year payback. This would probably result in Project A being selected, but A may not be the best choice because this method ignores cash flow beyond the payback period.

2. **DISCOUNTED CASH FLOW:** These methods consider the value of money over time; i.e., a dollar received today is worth more than a dollar received in the future. There are two methods of calculation which involve discounted cash flow:

A. NET PRESENT VALUE (NPV): This method determines the present value (PV) of future cash flows and subtracts it from the capital investment ($NPV = PV - CI$). Capital investment is known, but present value must be determined; to determine present value, future value (FV) must be understood. To determine future value, $FV = PV(1+i)^n$, where "i" is interest rate and "n" the number of years invested. To determine the future value of \$1,000 at 10% interest for five years:

$$\begin{aligned} FV &= 1,000(1 + .10)^5 \\ FV &= 1,000(1.6105) \\ FV &= 1,610.50 \end{aligned}$$

To determine the present value of some future amount, the equation is rearranged:

$$PV = \frac{FV}{(1+i)^n} \quad \text{Using the values above:}$$

$$\begin{aligned} PV &= \frac{1,610.50}{(1 + .10)^5} \\ PV &= 1,000 \end{aligned}$$

Example: net present value (NPV) of a \$10,000 project:

Year	Cash flow	Interest @ 10%	PV of cash flow
1	5,000	0.91	4,450
2	4,000	0.83	3,320
3	3,000	0.75	2,250
4	1,000	0.68	680
			PV 10,800
			- CI 10,000
			NPV 800

NPV is positive, so the project should be accepted.

3. **INTERNAL RATE OF RETURN (IRR):** The IRR is the calculated interest rate that makes the present value of the internal cash flows equal to the capital investments: $NPV = PV - CI = 0$. Another way of saying this is "At what interest rate will NPV be zero?" Since the goal is to find an interest rate that will produce an NPV of zero, a higher interest rate must be chosen. Example, assuming 15%:

Year	Cash flow	If interest 10 %	Present value	If interest 15 %	Present value
1	5,000	0.91	4,550	0.87	4,350
2	4,000	0.83	3,320	0.76	3,040
3	3,000	0.75	2,250	0.66	1,980
4	1,000	0.68	680	0.57	570
			PV 10,800		9,940
			- CI 10,000		10,000
			NPV 800		(60)

In the second trial above, NPV is negative 60, which indicates that the IRR is slightly less than 15 percent. If a precise number is required, the two points can be graphed and the precise IRR interpolated from the graph. Or, it can be calculated with computer programs.

Source: William D. Weaver, Rust International.

COSTING PROJECTS

Computer Integrated Manufacturing Expenditures

	High 90	Medium 9	Low 1
Financial payback			
Improved quality	80	16	2
Long term benefits	73	25	2
Operator safety, environment	68	27	5
Reduced scrap, rework	64	31	5
Flexibility	62	34	4
Competition	42	47	11
Management information	33	47	20
Public Image	1	28	71

Sources: National Electronics Manufacturers Assn. (NEMA); Foxboro Co.

A recent survey by the National Electronic Manufacturers Association shows that managers still consider payback as the primary measure for justifying automation expenditures. Long-term issues, however, were also considered important. (Sources: NEMA, Foxboro)

spending in terms with which they are familiar: NPV, IRR, ROI, and hurdle rate.

Justifying CIM

Computer integrated manufacturing can't be justified unless you know what problem is being solved, says Dr. Malcolm C. Beaverstock, manager of advanced management technology at The Foxboro Co. (Foxboro, MA). "The typical situation I find is a corporate group who wants funds to solve some vague productivity problem at a plant site," he adds. "Investments that try to solve poorly defined problems rarely succeed in gaining approval."

One problem in justifying CIM: Most benefits are determined *after* systems are installed and working, and were either not considered or not included in the justification procedure. According to Beaverstock, engineers reporting on CIM project results cite the following reductions: lead time (30-60 percent); engineering design (15-30 percent); work-in-progress (30-60 percent); personnel costs (5-20 percent); inventory (50-90 percent); floor space (40-70 percent); cost of quality (25-60 percent). Improvements: Engineering-analysis capability increased 300-500 percent, equipment uptime improved 200-300 percent, and quality (yield) improved 200-500 percent.

Another problem: outdated cost accounting systems, which focus on direct costs rather than indirect costs. Today, there are three manufacturing support people for every direct worker—a reversal from the situa-

tion in 1915—and labor cost in a typical high-technology company today seldom exceeds 10 percent of total costs, yet cost-accounting systems are still based on the 1915 view of labor.

Cost-accounting systems are slowly changing, however, as the manufacturing community recognizes the inadequacy of the present system. Absorption accounting allocates all costs (even the corporate jet) to each product produced, whereas more modern activity and business cost systems attempt to isolate and allocate costs by use.

Any justification must recognize the type of accounting system used by the company so benefits can be correctly calculated, says Beaverstock. CIM justification methods commonly used today:

- **Look-back**, "probably the most widely used because of the frustration involved with trying to calculate ROI." Look-back starts with funding a small pilot project (usually based on sheer belief in automation), establishes an audit trail, notes the benefits and extrapolates them to another project. Although this method reduces risk, results are delayed and it's possible to create "islands of automation" if individual projects are not integrated.

- **ROI**, which often fails because those preparing the documents make basic errors such as not including the benefits of inventory reduction, space savings or interaction with other operating units. Other problems result from outdated corporate policies such as unrealistic hurdle rates or interest costs, and failure to recognize intangible benefits.

Once discounted cash flow is established, there are usually not enough tangible benefits for a positive NPV, Beaverstock observes. One way of presenting such figures to management is by asking an adjustment figure to make NPV meet corporate standards. Management must then decide if the intangibles establish a reasonable risk. Managers usually agree that the intangibles of a CIM project will balance an adjustment figure of less than \$300,000 per year. Economic models based on factors influenced by automation can also be used to predict ROI.

- **Strategic**, which evaluates competitive factors: the market position of a particular plant or product line; product costs vs. competition (looking for the competitive edge); and business impact of the project.

The steps required to justify CIM are nearly identical to those for any engineering or construction project, Beaverstock concludes. "Knowledge of objectives, analysis of present operations and a good definition are the basic requirements," he adds.